REMARKS

In the interest of expediting prosecution, claims 1-28 have been cancelled and replaced by claims 29-44.

Claim 15 was rejected under 35 U.S.C. §112, second paragraph, as indefinite. This rejection is moot in view of the above amendments.

Claims 1-3, 15, 17 and 28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Komatsu, U.S. Patent No. 5,794,129. Claims 4-7, 14, 16 and 18-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Komatsu in view of Uesugi, U.S. Patent No. 6,341,214. Claims 8-11 and 22-25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Komatsu and Uesugi and further in view of Sakoda et al. U.S. Patent No. 6,226,526. Claims 12-13, and 26-27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Komatsu in view of Sakoda. These rejections are respectfully traversed.

THE CLAIMED INVENTION

The claimed invention is directed to a method of controlling the transmit power of a plurality of CDMA downlink channels from a base station to a plurality of mobile stations within a control range between a nominal lower limit and a nominal upper limit, and is directed to a CDMA communication system having such a capability.

The present invention is based on the recognition of a shortcoming of the prior art that power control is effected within a specified range. This prevents base stations from transmitting their power at a level below the lower limit, and so those mobile stations located near the base station may receive power at a higher level than they actually need for their

10

downlink channels. As a result, useful energy of a base station is wasted.

In addition, due to the presence of the upper limit, those mobile stations that are located far from the base station may receive less power than they actually need for their downlink channels, even when the level of the total power transmitted by the base station is below the maximum power control limit of the base station.

In accordance with exemplary embodiments of the invention, when a mobile station requests its base station to decrease the transmit power of a downlink channel, it is determined whether a hypothetically decremented value of the transmit power is higher or lower than a nominal lower limit. If higher, then the transmit power is decreased. If lower, than the transmit power is still decreased if the downlink channel has a quality higher than a specified quality threshold value. If the quality is lower, the transmit power is set to the nominal lower limit.

Further, in exemplary embodiments, when the mobile station requests the base station to increase the transmit power of the downlink channel, it is determined whether a hypothetically incremented value of the transmit power is higher or lower than a nominal upper limit. If lower, the transmit power is increased. If higher, it is determined whether the total transmit power of all the downlink channels is higher or lower than a specified threshold value. If the total transmit power of all the downlink channels is lower than the specified threshold value, the transmit power of the downlink channel is increased even when the hypothetically incremented value is greater than a nominal upper limit. If the total transmit power of all the downlink channels is equal to or higher than the specified threshold value, the transmit power of the downlink channel is set to the nominal upper limit.

11

In other exemplary embodiments, as long as the hypothetically decremented value of the transmit power is lower than the nominal lower limit, a count value is incremented, and <u>if the count value reaches the predetermined count value, the transmit power is decreased</u>.

THE PRIOR ART REFERENCES

The Komatsu Reference

Komatsu discloses a mobile communication system, including a base station, in which a power control unit 14 receives power instruction signals C1, C2, ... CN via channels 1-N from mobile stations, and determines whether any of the resulting <u>power control signals P1, P2, ... PN</u> is <u>above an upper limit or below a lower limit</u>. If so, the power control unit chooses the upper limit or lower limit, as applicable, as the associated power control signal P1, P2, ... PN. Then, if the <u>sum of the power control signals</u> surpasses a prescribed level, the power control unit 14 <u>corrects</u> the provisionally determined power levels, for example by reducing the transmission power levels on channels 1-N evenly.

There is no showing or suggestion of decreasing the transmit power of the downlink channel if the downlink channel has a <u>quality</u> higher than a specified quality threshold value <u>even when the hypothetically decremented value is lower than the lower limit</u>. There is likewise no showing or suggestion of increasing the transmit power of the downlink channel if the <u>total transmit power of all the downlink channels</u> is lower than a specified power threshold value <u>even when the hypothetically incremented value is greater than the nominal upper limit</u>.

12

The Uesugi Reference

Uesugi discloses a transmission power control method and transmission/reception apparatus in which the transmission power is <u>increased</u> when the field strength of the signal at a receive site is <u>higher</u> than a threshold and is decreased when the field strength is <u>lower</u> than the threshold. This is the <u>reverse of</u> what is usually performed on mobile transmissions and appears to be utilized only when a particular situation occurs, such as fading, See Uesugi at column 2, lines 43 to 61.

The Sakoda Reference

Sakoda discloses a transmission power control method, base station apparatus, and communication terminal. If the power is at its limit and the mobile unit generates a power-up command, a count value is incremented. When that count value reaches a certain value, the mobile unit <u>stops generating the power-up command</u>. See Sakoda at column 7, lines 45-61. Thus, Sakoda's apparatus stops generating power-up commands for increased power if a certain number of power-up commands have been generated while the power is at its limit.

There is <u>no</u> teaching or suggestion that the power up commands come at <u>regular time intervals</u>. Thus, the count value does <u>not</u> represent a time interval.

ARGUMENT

The Office Action contends that Komatsu teaches that if the quality of the signals is "low or unnecessarily high," the transceiver sends to the base station a request for a change in power, containing information on how much the power is to be "increased or decreased," and

13

cites Komatsu at column 1, lines 53+ for this. This is an acceptably accurate summary of that

portion of Komatsu. However, the Office Action then contends that while it is not explicitly

stated that you <u>increase</u> the power if the quality is <u>higher</u> than a threshold, one of ordinary

skill in the art would recognize by the above statement that this is what is implied, and would

find it obvious in view of what is stated. This contention is <u>traversed</u>.

First of all, if the quality is <u>higher</u> than a threshold, one would <u>not</u> <u>increase</u> the power,

since, if anything, that would <u>increase the quality</u> to a level even higher than before.

Secondly, exemplary claims 29 and 38 recite that when a mobile station requests its

base station to <u>decrease</u> the transmit power of a downlink channel, the transmit power is

<u>decreased</u> if the downlink channel <u>quality</u> is <u>higher</u> than a specified quality threshold value.

Thus, these claims are concerned with <u>decreasing</u> the power, <u>not</u> <u>increasing</u> the power. If

anything, Komatsu <u>leads away</u> from the claimed invention.

In addition, the claims specify that when a mobile station requests its base station to

decrease the transmit power of a downlink channel, the transmit power is decreased if the

downlink channel quality is higher than a specified quality threshold value <u>even when the</u>

<u>hypothetically decremented value is lower than a lower limit</u>. Neither Komatsu nor Uesugi

nor Sakoda shows or suggests <u>decreasing</u> the transmit power of the downlink channel if the

downlink channel <u>quality</u> is <u>higher</u> than a specified quality threshold value <u>even when the</u>

<u>hypothetically decremented value is lower than the lower limit</u>. Accordingly, these claims

distinguish patentably from the references and are allowable.

Claims 30 and 39 include that when a mobile station requests its base station to

increase the transmit power of a downlink channel, the transmit power is increased <u>if the total</u>

transmit power of all the downlink channels is lower than a specified power threshold value even when the hypothetically incremented value of the transmit power of the downlink channel is greater than a nominal upper limit. Neither Komatsu nor Uesugi nor Sakoda shows or suggests increasing the transmit power of the downlink channel if the total transmit power of all the downlink channels is lower than a specified power threshold value even when the hypothetically incremented value of the transmit power of the downlink channel is greater than the nominal upper limit. Accordingly, these claims distinguish patentably from the references and are allowable

Claims 34, 36-37 and 43-44 include that a count value is incremented as long as a hypothetically decremented value is lower that a nominal lower limit. "As long as" indicates a time interval. This is clear from page 10, lines 22-25 and page 11, lines 11-12 of the specification. Neither Komatsu nor Uesugi nor Sakoda shows or suggests a method or system in which as long as a hypothetically decremented value of the transmit power is lower than a nominal lower limit, a count value is incremented, and if the count value reaches a predetermined count value, the transmit power is increased or decreased. Accordingly, these claims distinguish patentably from the references and are allowable.

The specification paragraph commencing at page 8, line 6, which prior to the present Amendment did not agree with Figure 2, has been amended to agree with Figure 2. In accordance with this, the transmit power of the downlink channel is reduced if the downlink channel has a quality higher than a specified quality threshold value at the mobile station even when the hypothetically decremented value is lower than the nominal lower limit.

Serial No. 09/776,851
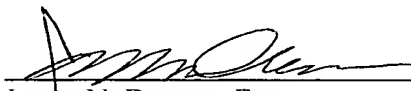Docket No.: NE-1038-US/KM

CONCLUSION

In view of the foregoing, Applicant submits that claims 29-44, all the claims presently pending in the application, are patentably distinct over the prior art of record and that the application is in condition for allowance. Such action would be appreciated.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned attorney at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

To the extent necessary, Applicant petitions for an extension of time under 37 CFR §1.136. The Commissioner is authorized to charge any deficiency in fees, including extension of time fees, or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: _August 18, 2004_

James N. Dresser, Esq.
Registration No. 22,973

McGinn & Gibb, PLLC
8321 Old Courthouse Road, Suite 200
Vienna, VA 22182-3817
(703) 761-4100
Customer No. 21254

16